

4 Macroeconomics ACTIVITY 4-3

Banks and the Creation of Money

A bank is a financial intermediary that uses bank deposits to finance investment. That is, a bank receives deposits from savers (households) and loans them out to investors (firms). Banks earn profits by making loans. They will loan out most, but not all, of the deposits they receive. They can't loan out all of the deposits because they have to provide depositors with their funds, on demand (which is the origin of the term *demand deposits*). The fraction of deposits that a bank keeps on hand (either in their vault or deposited with the Federal Reserve) is the bank's *reserves*. Banks are required by law to keep a certain minimum fraction of their deposits on reserve. These are called *required reserves*. Any reserves in excess of the required reserves are called *excess reserves*. When banks keep only a fraction of their deposits on hand and can loan out the rest, it is called a *fractional reserve* banking system. With a fractional reserve system, banks can create money to expand the money supply.

To see how a bank can create money and increase the money supply in the economy, consider the following scenario.

1. A new checkable deposit of \$1,000 is made in Bank 1. The required reserve ratio is 10 percent of checkable deposits, and banks do not hold any excess reserves. That is, banks loan out the other 90 percent of their deposits. Assume that all money loaned out by one bank is redeposited in another bank. To see how the new deposit creates money and increases the money supply, find the following values.
 - (A) Bank 1 must keep required reserves = \$_____
 - (B) Bank 1 can loan = \$_____
 - (C) When the proceeds of the loan are redeposited, Bank 2 receives new deposits = \$_____
 - (D) Bank 2 must keep additional required reserves = \$_____
 - (E) Bank 2 can now make new loans = \$_____
 - (F) When the proceeds of the loan are redeposited, Bank 3 receives new deposits = \$_____
 - (G) Bank 3 must keep additional required reserves = \$_____
 - (H) Bank 3 can now make new loans = \$_____

2. Use your answers from above to complete Table 4-3.1. Round the values to two decimals (e.g., \$59.05). After you have completed the table, fill in the blanks in the statements that follow.



Table 4-3.1

Checkable Deposits, Reserves, and Loans in Seven Banks

Bank	New checkable deposits	10% required reserves	Loans
1	\$1,000.00	\$100.00	\$900.00
2	\$900.00		\$810.00
3		\$81.00	
4			\$656.10
5			
6		\$59.05	
7	\$531.44		\$478.30
All other banks combined			
Total for all banks	\$10,000.00		\$9,000.00

- (A) The original deposit of \$1,000 increased total bank reserves by \$ _____. Eventually, this led to a total of \$10,000 expansion of bank deposits, \$ _____ of which was because of the original deposit, while \$ _____ was because of bank lending activities.
- (B) If the required reserve had been 15 percent instead of 10 percent, the amount of deposit expansion would have been (*more / less*) than in this example.
- (C) If the fractional reserve had been 5 percent instead of 10 percent, the amount of deposit expansion would have been (*more / less*) than in this example.
- (D) If banks had not loaned out all of their excess reserves, the amount of deposit expansion would have been (*more / less*) than in this example.
- (E) If all loans had not been redeposited in the banking system, the amount of deposit expansion would have been (*more / less*) than in this example.

3. Another way to represent the multiple expansion of deposits is through *T-accounts*. A T-account shows offsetting assets and liabilities. For the bank, *assets* include loans, deposits with the Federal Reserve, and Treasury securities. *Liabilities* include deposits. Use the T-account below to show how the new \$1,000 deposit described in the previous example would be listed in a T-account.

Assets	Liabilities

An easier way to determine how much money can be created if the bank loans out all of its excess reserves is to use the *deposit expansion multiplier*. The deposit expansion multiplier determines how much money can be created in the economy from an initial deposit. The formula for the deposit expansion multiplier is equal to $(1/rr)$, where rr is the reserve requirement.

$$\text{Deposit expansion multiplier} = 1/rr.$$

In this example, the reserve requirement is 10 percent so the deposit expansion multiplier is $(1/0.1)$, which equals 10. This means that for every dollar of new excess reserves, the money supply will increase by \$10.

To find the total amount of money created, use the following equation:

$$\text{Expansion of the money supply} = \text{excess reserves} \times \text{multiplier}.$$

The multiplier is 10, and excess reserves from the initial bank deposit are \$900. So the potential expansion of money ($M1$) would be \$900 times 10, or \$9,000. $M1$ now consists of the new deposit of \$1,000 plus the \$9,000 created.

Student Alert: Make sure you read any money multiplier questions carefully to determine exactly which value the question asks for. For example, does it ask you to calculate the initial change or the final change?

4. Assume that \$1,000 is deposited in the bank, and that each bank loans out all of its excess reserves. For each of the following required reserve ratios, calculate the amount that the bank must hold in required reserves, the amount that will be excess reserves, the deposit expansion multiplier, and the maximum amount that the money supply could increase.

	Required reserve ratio		
	1%	5%	10%
Required reserves			
Excess reserves			
Deposit expansion multiplier			
Maximum increase in the money supply			

(A) Will an increase in the reserve requirement increase or decrease the money supply? Explain.

(B) What will happen to deposits, required reserves, excess reserves, and the money supply if deposits are withdrawn from the banking system?

(C) What could happen at each stage of the money creation process to prevent the money supply from increasing the full amount predicted by the deposit expansion multiplier?